

Nineteen-inch direct-view monochrome television picture tube with electrostatic focusing, magnetic deflection, and an aluminized P4 screen. Manufacturer documentation places it in the high-voltage picture-tube family used for bright, high-contrast receiver display.

GENERAL CHARACTERISTICS

BASE DESIGNATION	—	BASE PINS	6
NOMINAL HEATER	6.3 V / 600 mA	PARALLEL HEATER	— / —
HEATING	Indirect	SERIES OPERATION	Not specified
CATHODE ARRANGEMENT	Separate cathodes	SECTION CONSTRUCTION	Similar

SECTION RATINGS

SECTION1 Cathode Ray	
MAXIMUM PLATE VOLTAGE	19800 V
CRT accelerator/final-anode maximum mapped to MaxPlateVoltage.	

19CLP4 — Direct-View Picture Tube

The **19CLP4** is a 19-inch direct-view rectangular glass cathode-ray tube designed for television display applications. It features a spherical faceplate made of gray filter glass, an aluminized screen, and a low Grid #1 voltage design optimized for cathode drive. The tube utilizes a 92-degree magnetic deflection angle, electrostatic focusing, and an external conductive coating. It does not require an ion trap.

Construction and Mechanical Specifications

The 19CLP4 is constructed with a J149B1 (or equivalent) glass bulb envelope and a B6-203 base. The faceplate is spherical and composed of gray filter glass with approximately 78% light transmittance at the center. The screen is aluminized and uses a P4 phosphor.

Physical Dimensions

- **Overall Length:** 15-1/4 +/- 3/8 inches
- **Neck Length:** 5-1/2 +/- 3/16 inches
- **Greatest Diagonal:** 18-5/8 +/- 1/8 inches
- **Greatest Width:** 16-13/32 +/- 1/8 inches
- **Greatest Height:** 13-11/32 +/- 1/8 inches

Screen Dimensions (Minimum Useful Projected)

- **Diagonal:** 17-9/16 inches
- **Horizontal Axis:** 15-1/8 inches
- **Vertical Axis:** 12 inches
- **Area:** 172 square inches

The bulb contact is a J1-21 recessed small cavity cap, which aligns with pin position #6 within +/- 30 degrees.

Electrical Characteristics and Ratings

The 19CLP4 operates with a nominal heater voltage of 6.3 V and a heater current of 600 +/- 10% mA. The heater warm-up time is 11 seconds.

Direct Interelectrode Capacitances

- **Cathode to all other electrodes:** approximately 5 pF
- **Grid #1 to all other electrodes:** approximately 6 pF
- **External conductive coating to anode:** 1,500 min. to 2,000 max. pF

Deflection Angles (Approximate)

- **Diagonal:** 92 degrees
- **Horizontal:** 80 degrees
- **Vertical:** 65 degrees

Design Maximum Ratings

All voltages are positive and measured with respect to Grid #1 unless otherwise specified.

- **Anode Voltage:** 12,000 V (min.) to 19,800 V (max.)
- **Grid #4 (Focusing Electrode) Voltage:** -500 V to +1100 V
- **Grid #2 Voltage:** 25 V (min.) to 40 V (max.)
- **Cathode Voltage:** 100 V (max.)
- **Heater Voltage:** 5.8 V (min.) to 7.0 V (max.)
- **Maximum Heater-Cathode Voltage:**

- Heater negative with respect to cathode:
 - During warm-up period (≤ 15 seconds): -410 V
 - After equipment warm-up period: -180 V
- Heater positive with respect to cathode: 180 V
- **Grid #1 Circuit Resistance:** 1.5 M-ohms (max.)

Typical Operating Conditions (Cathode Drive Service)

In typical cathode drive service, voltages are positive and measured with respect to Grid #1 unless otherwise specified:

- **Anode Voltage:** 14,500 V
- **Grid #4 (Focusing Electrode) Voltage:** 250 V (with individual tubes focusing anywhere between 0 and 500 V)
- **Grid #2 Voltage:** 35 V (for visual extinction of a focused raster)
- **Cathode Voltage:** 25 to 40 V (with combined Grid #1 bias and video-signal voltage adjusted for 150 microamperes anode current on a 15-1/8 x 12 inch pattern from a 2F21 Monoscope or equivalent)

Pinout and Basing

The 19CLP4 uses the **12L** basing arrangement with a B6-203 base. The pin connections are as follows:

Pin Number	Connection
Pin 1	Heater
Pin 2	Grid No. 1
Pin 6	Grid No. 4 (Focusing Electrode)
Pin 10	Grid No. 2
Pin 11	Cathode
Pin 12	Heater
Recessed Cavity Cap (J1-21)	Anode

Technical Summary

The **19CLP4** is a rectangular, direct-view television picture tube featuring a 19-inch diagonal spherical faceplate with gray filter glass and an aluminized P4 phosphor screen. It utilizes electrostatic focusing and 92-degree magnetic deflection. The tube is designed for cathode drive service with a low Grid #1 voltage (35 V typical) and does not require an ion trap. It operates with a 6.3 V, 600 mA heater and is housed in a J149B1 bulb with a B6-203 base and 12L pinout.

SOURCE OPERATING CONDITIONS

[SOURCE PDF](#)

1963 Rauland

Published test conditions and operating points. Values on this page are preserved as reported by this source.

1963 RAULAND

Section 1 · Cathode Ray

OTHER		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Heater voltage	6.3 V	—
Heater current	600 mA	—
Typical anode/accelerator voltage	19800 V	—
Typical grid 2 voltage	40 V	—
Maximum heater-cathode voltage	180 V	Heater positive to cathode

CHARACTERISTIC		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Focusing method	Electrostatic	—
Deflection method	Magnetic	—
Deflection angle	80 deg	—